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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,535	10/29/2003	Michael George Azar	05516/147002	7821

7590 02/17/2006

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EXAMINER	
COLLINS, GIOVANNA M	

ART UNIT	PAPER NUMBER
3672	

DATE MAILED: 02/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/696,535	AZAR ET AL.	
	Examiner	Art Unit	
	Giovanna M. Collins	3672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-8,11-16,18-26,28-30 and 40-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-8,11-16,18-26,28-30,40-44,46 and 47* is/are rejected.

7)☒ Claim(s) *45* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The specification does not disclose a matrix material is cubic born nitric crystals cemented in a compounded selected from the group consisting or carbides, borides and nitrides as recited in claim 45.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,3-4,8-9,11,16 -19,23-24,27-28, and 40-44 are rejected under 35 U.S.C. 102(b) as being anticipated by Fuller 4,919,220.

Referring to claim 1, Fuller discloses (fig. 6) an insert comprising a diamond impregnated bit (19, col.4, lines 30-33) and a thermally stable shearing portion comprising thermally stable polycrystalline diamond (col. 4, lines 49-52) where at least a portion of the diamond impregnated insert body and at least a portion of the thermally stable shearing portion form a leading edge of the insert.

Referring to claims 3-4, 23-24, Fuller discloses a bonding portion (18) of tungsten carbide (col. 4, lines 5, lines 62-col. 6, line 3).

Referring to claim 8, Fuller discloses the thermally stable shearing portion is disposed on the diamond impregnated insert body post filtration (col. 3, lines 51-53).

Referring to claims 9, 17,27, Fuller discloses the shearing portion (15) forms a leading edge of the insert.

Referring to claims 11 and 28, Fuller discloses a wear portion (Fig. 6, top surface of the insert) disposed on a surface of the diamond impregnated insert body.

Referring to claim 16, Fuller discloses a bit body (fig. 1, at 10) having at least one blade (11), at least one cutting element (at 15) which comprising a diamond impregnated body (19) and a thermally stable shearing portion comprising thermally stable polycrystalline diamond (col. 4, lines 49-52) where at least a portion of the diamond impregnated insert body and at least a portion of the thermally stable shearing portion form a leading edge of the insert.

Referring to claim 18, Fuller discloses a bit body (10) and a plurality of inserts (at 15) having a diamond impregnated body (19) and a thermally stable shearing portion comprising thermally stable polycrystalline diamond (col. 4, lines 49-52) where at least a portion of the diamond impregnated insert body and at least a portion of the thermally stable shearing portion form a leading edge of the insert.

Referring to claim 19, Fuller discloses the total exposure of the insert body (19) to temperatures about 1000 F is great than a total exposure of the shearing portion (15) to temperatures about 100 F.

Referring to claim 40, Fuller discloses a method of drilling a mixed formation comprising contacting a bit with the mixed formation (col. 2, lines 12-15) where the bit comprises a bit body (10) and a plurality of inserts (at 15) having a diamond impregnated body (19) and a thermally stable shearing portion comprising thermally stable polycrystalline diamond (col. 4, lines 49-52) where at least a portion of the diamond impregnated insert body and at least a portion of the thermally stable shearing portion form a leading edge of the insert.

Referring to claims 41 and 43-44, Fuller discloses an abrasive insert body (19) having a mixture of a ultra hard material of material of diamond crystals (col.4, lines 30-33) and a less abrasion resistant matrix material of carbides (col. 3, lines 51-53) and a thermally stable shearing portion comprising thermally stable polycrystalline diamond (col. 4, lines 49-52) where at least a portion of the diamond impregnated insert body and at least a portion of the thermally stable shearing portion form a leading edge of the insert.

Referring to claim 42, Fuller discloses where the abrasive resistance of the ultra hard material (at 19) and the matrix material (col. 3, lines 51-53) varies depending of the formation compressive strength and abrasivity and the size of the ultra hard material.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 5-6,12-13,25-26,29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuller '220 in view of Siever et al. 5,279,374.

Referring to claims 5-6,12-13,25-26,29-30, Fuller does not disclose a coating on the insert body of the shearing portion. Siever teaches a tungsten carbide layer on an insert body and a shearing portion of the insert (see Fig. 3 and col. 2, lines 35-46). Siever teaches the coating helps to prevent the inserts from being lost before they fully wear out due to pockets wearing out before cones (col. 1, lines 37-42). As it would be advantageous to prevent the lost of inserts before they are fully worn, it would be obvious to one of ordinary skill in the art at the time of the invention to modify the insert disclose by Fuller to have a tungsten carbide coating as taught by Siever.

4. Claims 7 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuller '220 in view of Truax et al. 2001/00478891.

Referring to claims 7 and 22, Fuller does not disclose the insert body has thermally stable polycrystalline diamonds. Truax teaches an insert with thermally stable polycrystalline diamonds that enhance shearing of the formation (paragraph 0028). As it would be advantageous to enhance shearing of the formation if the cutter element wears rapidly or fractures, it would be obvious to one of ordinary skill in the art at the time of the invention to modify the insert disclosed by Fuller to have thermally stable polycrystalline diamonds in view of the teachings of Truax.

5. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fuller '220 in view of Sung et al. 4,943,488.

Fuller discloses the insert body comprises natural diamond (col. 3, lines 60-61) but does not disclose the diamond is coated. Sung teaches coating diamond particle in diamond impregnated articles helps to improve the retention of the diamond particle in the supporting structure (col. 4, lines 64-67). As it would be advantageous to improve the retention of the diamond particle in the insert, it would be obvious to one of ordinary skill in the art to modify the insert disclosed by Fuller to have coated diamond particles in view of the teachings of Sung.

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fuller '220 in view of Sung et al. 4,943,488 as applied to claim 14, and further in view of Garner '3,318,399.

Fuller, as modified, does not disclose the diamond is one carat. Garner teaches bit-using diamonds that are 1 carat in size when drilling is softer formations (col. 2, lines 42-46). As it would be advantageous to use have diamonds one carat in size when drilling softer formations, it would be obvious to one of ordinary skill in the art to further modify the insert disclosed by Fuller, as modified by Sung to have diamonds one carat in size in view of the teachings of Garner.

7. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuller '220 in view of Caraway et al. 6,193,000.

Referring to claims 20-21, Fuller does not disclose the bit body is diamond impregnated tungsten carbide matrix. Caraway teaches that such bits are well known in the art (col. 4, lines 30-49). As one of ordinary skill in the art would be familiar with a bit body that is diamond impregnated tungsten carbide matrix, it would be obvious to one of ordinary skill in the art to modify bit disclose by Fuller to have a body that is diamond impregnated tungsten carbide matrix as taught by Caraway.

8. Claim 46-47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fuller '220 in view of Garner '399.

Fuller does not disclose the diamond concentration and size depends on the abrasivity and compressive strength of the formation. Garner teaches a drill bit with larger and lower concentration of diamonds is better when drilling a softer formation and a drill bit with a smaller larger concentration of diamonds is better when drilling harder formations (col. 2, lines 43-50). As it would be advantageous to use larger, smaller concentration of diamonds when drilling softer formations and smaller larger concentration of diamonds when drilling harder formations, it would be obvious to one of ordinary skill in the art to modify cutting element disclosed by Fuller to have the concentration and particle size of the diamonds depend upon the abrasivity and compressive strength of the formation in view of the teachings of Garner.

Referring to claim 47, Fuller does not disclose the diamond concentration is varied. Garner teaches a drill bit with larger and lower concentration of diamonds is better when drilling a softer formation and a drill bit with a smaller larger concentration

of diamonds is better when drilling harder formations (col. 2, lines 43-50). As it would be advantageous when selectively vary the diamond concentration depending upon what type of formation is being drilling, it would be obvious to one of ordinary skill in the art to modify cutting element disclosed by Fuller to vary the concentration of the diamonds in view of the teachings of Garner.

Allowable Subject Matter

9. Claim 45 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

10. Applicant's arguments filed 11/30/05 have been fully considered but they are not persuasive. The applicant argues Fuller reference discloses a diamond impregnated abrasion element that is spaced rearwardly of the cutting element and thus does not from part of the leading edge of the insert. However, in the embodiment disclosed in Fig. 6, Fuller discloses the diamonds are impregnated in the insert itself (col.4, lines 30-33) and thus a portion of the diamond impregnated insert body from a leading edge of the insert. Furthermore, the argument the cutting elements of the invention can be grind and shear a formation is moot since these features are not claimed.

11. Applicant's arguments with respect to claims 41-44,46-47 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Giovanna M. Collins whose telephone number is 571-272-7027. The examiner can normally be reached on 6:30-3 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David J. Bagnell can be reached on 571-272-6999. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gmc

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